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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,933	09/11/2006	Naoharu Nakaiso	2342-0143PUS1	7899
2292 7590 06/04/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER EGGERDING, MATTHEW THOMAS	
			ART UNIT 1763	PAPER NUMBER
			NOTIFICATION DATE 06/04/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

## Office Action Summary

**Application No.**

10/549,933

**Applicant(s)**

NAKAISO, NAOHARU

**Examiner**

Matthew Eggerding

**Art Unit**

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>20051220; 20050920</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 8-11 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Publication No. 09-102463 to Yoshiaki ("Yoshiaki").

With respect to claim 1, Yoshiaki teaches a substrate processing apparatus characterized by comprising: a reaction container which processes a plurality of substrates; a heater which heats said plurality of substrates; and at least one nozzle through which reaction gas is supplied into said reaction container, wherein said nozzle is attached to said reaction container with said nozzle penetrating a wall of said reaction container, and a flow-path cross-sectional area of a portion of said nozzle that is opposed to at least said heater is greater than a flow-path cross-sectional area of the nozzle-attaching portion. (Fig. 6; para. [0035]-[0045]).

Regarding claim 8, Yoshiaki teaches the nozzle includes a horizontal portion extending in a horizontal direction and a vertical portion rising in a vertical direction, said horizontal portion is attached to a sidewall of said reaction container, and a portion of the vertical portion is opposed to said heater. (Fig. 6).

For claims 9, 10 and 13, Yoshiaki teaches the reaction gas is  $\text{SiH}_4$ , and said processing is a film-forming processing of a silicon film. (para. [0034]).

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Regarding claim 11, Yoshiaki teaches the nozzle comprises a plurality of nozzles having different lengths. (Fig. 6).

For claim 12, Yoshiaki teaches the said heater is divided into a plurality of heater zones, and when said substrate is processed, temperatures in the reaction container corresponding to the respective heater zones are maintained at the same temperatures. (Fig. 1, 6; para. [0018]).

For claim 15, Yoshiaki teaches a producing method of a semiconductor device characterized by comprising: a step for transferring a substrate or a substrates into a reaction container, a step for processing the substrate or substrates by supplying reaction gas into a reaction container through a nozzle which is attached to said reaction container such that the nozzle penetrates a wall of the reaction container and in which a flow-path cross-sectional area of a portion of the nozzle opposed to at least a heater is greater than a flow-path cross-sectional area of the attaching portion, and a step for transferring the processed substrate or substrates out from the reaction container. (Fig. 6; para. [0035]-[0045]).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2-7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshiaki.

A. Claims 2-7

Claims 2-7 present various shapes for the cross-sections of different portions of the nozzle. The configurations of the nozzle cross-sections are a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configurations of the cross-sections were significant. See *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). Here, there is no indication that the different configurations were significant. (See Applicant's Published Application, Fig. 8A-12B, para. [0077]).

B. Claim 14

Yoshiaki teaches the heater maintaining the temperature in the reaction container corresponding to the heater zones at a predetermined temperature. (para. [0018]).

Yoskiaki does not expressly teach maintaining the temperature in a range of 650°-670°C.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to maintain the temperature in a range of 650°-670°C.

The suggestion/motivation would have been to maintain the temperature in a preferable range for the required processing. The container temperature is a result-effective variable because the temperature of the container affects the quality of the processing. See *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Hence, it would have been obvious to optimize the container temperature to the claimed range for the chosen process.

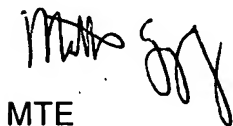
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew Eggerding whose telephone number is (571) 272-8012. The examiner can normally be reached on Monday-Friday, 8:30 AM-5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
MTE

  
RAM N. KACKAR, P.E.  
PRIMARY EXAMINER